

by far the most common species I have recorded in the fenceposts. Because of its adaptability (suggested by its successful invasion of buildings further north) it may eventually become established here. However, to do this it must adjust to a much higher rainfall (600 v. 300mm/year) and successfully compete with its coastal ecological equivalent *Phyllodactylus marmoratus*.

Scincidae

Cryptoblepharus plagiocephalus

As equally adaptable as the preceding species although unrecorded on the coast until 1982. Since then I have collected numerous specimens both at mulga fencepost dumps and on mulga posts erected along fencelines. This species appears to have become locally established only since the widespread use of mulga on the coast.

Egernia depressa

A saxicoline and arboreal species found south to Widgiemooltha in this region. It is more specialized in habitat requirements than both preceding species and, therefore, unlikely to become established on the coastal sandplain.

Egernia formosa

Both terrestrial and arboreal south to Norseman. As for *E. depressa*.

Varanidae

Varanus caudolineatus

Both arboreal and saxicoline in the mulga dominated arid areas. Unlikely to become established on the much wetter coastal sandplain.

REFERENCE

COGGER, H.G. 1979. *Reptiles and Amphibians of Australia* (2nd edition). Reed, Sydney. pp. 159-60.

NEW SUBSPECIES OF GREY SHRIKE-THRUSH AND LONG-BILLED CORELLA FROM WESTERN AUSTRALIA

By JULIAN FORD, Western Australian Institute of Technology, Bentley, Western Australia 6102.

A subspecies is currently defined as a geographical segment of a species that acquired its distinguishing taxonomic characters while isolated from other such segments. It may be either geographically isolated or in secondary contact with other subspecies. This is an evolutionary concept which obviates the subspecific division of clinal segments of a primary continuum of populations. It was formulated by Ford (1974) and has since become widely accepted (Weins 1982). There are two avian isolates in Western Australia that fulfil the criteria of this concept and which are here formally described.

COLLURICINCLA HARMONICA KOLICHISI subsp. nov.

Holotype: WAM A15798, a male collected on 10 October 1978 by J.R. Ford in the Cape Range, just west of Learmonth.

Paratypes: All specimens of *kolichisi* in the collections of Western Australian Museum and American Museum of Natural History:

WAM A5073-4, A8711, A19003, A15109-10, A15797, AMNH 656801-4, all from Cape Range.

Diagnosis: Like *rufiventris* in having buffy under-tail coverts and no sepia mantle but differs in being consistently smaller in all dimensions. Table 1 illustrates the morphometric differences between *kolichisi* and *rufiventris* from the Gascoyne-Pilbara region.

Range: Confined to Cape Range, a strongly dissected limestone plateau on the North-West Cape Peninsula, and isolated from populations of *rufiventris* in the Gascoyne and Ashburton districts by lowland dunes and plains (Storr 1984; Ford 1987).

Remarks: The diminutive size of shrike-thrushes on the North-West Cape Peninsula was first noticed by Mr N. Kolichis after whom the new subspecies is named. The size of *kolichisi* is not associated with a south-north cline in accordance with Bergmann's effect, for *kolichisi* is isolated and mainland populations of *rufiventris* to the north and south are composed of larger individuals. Individuals of *kolichisi* are completely distinguishable from *rufiventris* if wing and tail measurements are simultaneously used. There is also complete discrimination on the basis of total length. The eggs of *kolichisi* are smaller than those of *rufiventris* (N. Kolichis pers. comm.).

CACATUA PASTINATOR BUTLERI subsp. nov.

Holotype: WAM A16996, a male collected by J.R. Ford on 15 November 1979 25km east of Coorow. Measurements (in mm): wing 297, tail 149, culmen 40.5, tip of maxilla 15.0, total length 428.

Diagnosis: Like nominate *pastinator* in colour but differing in its generally smaller size. For full details of these size differences, see the table of measurements in Ford (1985).

Paratypes: All specimens of *butleri* currently in the collections of the Western Australian Museum and National Wildlife Collection, Canberra: WAM A6434, A6944-5, A7127, A8407, A16393, A16974-8, A16980, A16986, A16988-95, A16997-17001, A17010-24, A17030-43, A17050-2, NWC 18,098-9, 36179-84, 36189-1, 36194-6, 36215, 36218, 36253, 36255-6, 36258-9, 38261, 36269-70, 36284, 36301-2, 36316-8, 36401-4.

Range: Northern Wheatbelt of Western Australia and contiguous coastal region bounded by Dongara, Mullewa, Morawa, Jibberding, Kirwan, Moora, Wongan Hills, Dandaragan and Jurien. [Nominate *pastinator* is restricted to an area about Lake Muir but formerly was more widely distributed from Perth southwards (Carter 1912; Serventy & Whittell 1976). The two subspecies are isolated and there is no evidence of any past geographical connection by a clinally intermediate population.]

Remarks: Multivariate discriminations between *pastinator* and *butleri* were carried out using measurements of wing, tail, culmen, mandible, maxilla width, mandible width and maxilla tip. When the Mahalanobis distance was maximized along one co-ordinate, 88% of males and 97% of females were correctly identified. The minimum separation often demanded for subspecific separation is 75% (May 1969). The new subspecies is named after Mr W.H. Butler, in appreciation of his services to Western Australian ornithology.

Table 1: Measurements (mm) of specimens *Colluricincla harmonica* from Western Australia

Character	No.	MALES		Range	No.	FEMALES		Range
		Mean	SD			Mean	SD	
WING								
<i>kolichisi</i>	9	112.0	2.4	109-116	3	107.0	1.0	106-108
<i>rufiventris</i> *	15	120.2	2.6	116-126	6	118.0	1.9	115-120
TAIL								
<i>kolichisi</i>	9	95.0	2.0	93-99	3	94.0	2.0	92-96
<i>rufiventris</i>	15	104.8	3.6	99-114	6	101.8	1.7	100-104
CULMEN								
<i>kolichisi</i>	9	27.0	1.1	25.6-29.0	3	26.2	1.0	25.1-27.0
<i>rufiventris</i>	15	28.6	0.8	27.0-30.2	6	27.7	0.7	26.7-28.4
TARSUS								
<i>kolichisi</i>	9	29.4	0.8	28.5-31.0	3	29.6	0.8	28.8-30.4
<i>rufiventris</i>	15	31.3	1.0	29.0-32.5	6	31.4	0.9	30.8-32.7
TOTAL LENGTH**								
<i>kolichisi</i>	5	224.8	4.7	220-231				
<i>rufiventris</i>	10	247.8	5.3	240-256				

* specimens from Gascoyne and Pilbara regions

** includes males and females

Table 2: Discriminant coefficients for characters maximizing Mahalanobis distance between the subspecies *pastinator* and *butteri* of the Western Long-billed Corella *Cacatua pastinator*.

Character	MALES		FEMALES	
	Standardized	Coefficients	Standardized	Coefficients
		Unstandardized		Unstandardized
Wing length	-1.080		-0.103	- 0.014
Tail length	0.979		0.773	0.142
Culmen length	1.081		0.676	0.302
[Constant]		-9.261		-30.249
Group means				
<i>pastinator</i>		2.051		1.917
<i>butteri</i>		-0.491		-0.750
Eigenvalue		1.043		1.484

Type locality: The correct allocation of nominate *pastinator* had to be established in order to determine which population required a name. Gould (1840) merely gave Western Australia; and his type specimen is in neither the British Museum (Natural History) nor the Academy of Natural Sciences of Philadelphia, the institutions where Gould's types are generally located. Gould (1840) gave the following measurements for his type (converted to mm): total length 445, bill 41.3, wing 305, tail 178, and tarsus 25.4. Using the coefficients for discriminating between males of *pastinator* and *butleri* (Table 2), this specimen has a discriminant score of 2.39 and so was a member of the southern population. The type might have been obtained near Perth, perhaps by John Gilbert, for in the early period of European settlement the species was fairly common about Guildford (Serventy & Whittell 1976). Note that the type of *butleri* has a discriminant score of -1.40.

Conservation: Several avian populations in the southern third of Australia are under threat because of habitat despoliation. Some of these populations are morphologically distinguishable from conspecific populations in less threatened habitats. Unless threatened populations have separated taxonomic identity, efforts to conserve them may be deemed unnecessary. It was partly on this philosophy that I decided to recognise the two populations of *C. pastinator* as separate subspecies.

Biology: The breeding biology of *butleri* has been studied at Coomallo Creek (Saunders 1977). Information on nesting is also given by Serventy & Whittell (1976).

ACKNOWLEDGEMENTS

I am grateful to Dr G.M. Storr and Mr J. Dell for helpful suggestions on the text.

REFERENCES

- CARTER, T. 1912. Notes on *Licmetis pastinator* (Western Long-billed Cockatoo). *Ibis* 54: 627-634.
- FORD, J. 1974. Concepts of subspecies and hybrid zones, and their application in Australian ornithology. *Emu* 74: 113-123.
- FORD, J. 1985. Species limits and phylogenetic relationships in corellas of the *Cacatua pastinator* complex. *Emu* 85: 163-180.
- FORD, J. 1987. Minor isolates and minor geographical barriers in avian speciation in continental Australia. *Emu* 87: 90-102.
- GOULD, J. 1841. Descriptions of fifty new species of Australian birds. *Proc. Zool. Soc., London* 1840: 169-183.
- MAYR, E. 1969. *Principles of Systematic Zoology*. McGraw-Hill, New York.
- SAUNDERS, D. 1977. Breeding of the long-billed Corella at Coomallo Creek, WA. *Emu* 72: 223-227.
- SERVENTY, D.L. & H.M. WHITTELL. 1976. *The Birds of Western Australia*. 5th ed. Univ. West. Aust., Perth.
- STORR, G.M. 1984. Birds of the Pilbara Region, Western Australia. *Rec. West. Aust. Mus. Suppl.* no. 16:1-63.
- WEINS, J. 1982. Forum: Avian subspecies in the 1980's *Auk* 99: 593-615.